Correspondence and Mail
BOX AF

AF/2736

#6

6/15/00

OIPE JC100
JUN 12 2000
PATENT & TRADEMARK OFFICE

CERTIFICATE OF MAILING
37 C.F.R 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231, on the date below:

9 June 2000 (Date) Richard C. Auchterlonie (Signature) Reg. 30,607

RECEIVED
JUN 14 2000
TC 2700 MAIL ROOM

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: PAUL A. BROWN	Group Art Unit: 2736
Serial No.: 09/287,028	Examiner: E. Lefkowitz
Filed: April 6, 1999	Atty. Dkt. No.: NRWB:002--2/AUC
For: TRANSMISSION NETWORK AND FILTER THEREFOR	**EXPEDITED EXAMINING PROCEDURE**

RESPONSE TO FINAL OFFICIAL ACTION

Box AF
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

This is a response to the Final Official Action dated March 10, 2000.

In paragraph 2 of the Final Official Action, claims 9-37 were rejected under the judicial doctrine of double patenting over claims 1-10 of U.S. Patent No. 5,929,750. In response thereto, enclosed is a Terminal Disclaimer and a check for $110.00 to cover the fee for filing the terminal disclaimer. Please charge any deficiency in the fee for filing the terminal disclaimer and refund any excess to Arnold, White & Durkee Deposit Account No. 01-2508, Order No. NRWB:002--2.

In paragraph 4 of the Official Action, claims 9-37 were rejected under 35 U.S.C. 102(e) as being anticipated by Abraham (5,559,337) for the reasons stated in the final rejection (paper 11, mailed 7-21-98) in the parent application 08/826,983. The applicant respectfully traverses.

The final rejection in the parent application 08/826,983, page 3, says Abraham discloses "the same subject matter that the carrier frequencies are preferably up to 11 MHz," citing Abraham, col. 7, lines 34-35. However, the reference to 11 MHz appears to be a typographical error, because a person of ordinary skill would have understood that power line carrier frequencies should be limited to less than 1 MHz, and absent the single reference to 11 MHz, Abraham teaches that one should use power line carrier frequencies that are less than 1 MHz.

Anticipation under Section 102 requires more than just a disclosure of each and every limitation of the claimed invention in a single prior-art reference. "In addition, the reference must be enabling and describe the applicant's claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." In re Paulsen, 30 F.3d 1475, 1478, 31 U.S.P.Q.2d 1671, 1673 (Fed. Cir. 1994). In the present case, a typographical error of 11 MHz instead of 1 MHz is insufficient to place the applicant's invention in possession of a person of ordinary skill in the field of power line carrier communication.

Prior to the applicant's novel disclosure, a person of ordinary skill understood that for a variety of reasons, such as reflection, radiation, attenuation, and interference, one should not use power line carrier frequencies that are greater than approximately 1 MHz. As discussed on page 2 of applicant's specification, the Fromby and Adams paper suggested using frequencies in the range of 80 to 100 kHz. 100 kHz was recommended as a maximum because theory suggested that higher frequencies would suffer from excessive attenuation. Other papers recommended a

maximum of 150 kHz due to the fact that radiated signals higher than 150 kHz would interfere with broadcast radio signals.

Additional references were discussed in the prosecution of the grand-parent application SN 08/347,427. For example, I.C. Vercellotti & I.A. White, "Distributed Power Line Communications for Remote Meter Reading and Selective Load Control," Proceedings of the American Power Conference 1974, Vol. 36, pp. 1114-1119, says on page 1166, column 2: "At frequencies above 200 kHz, attenuation is too high for long-distance communications."

B. Ron Russel, editor, "Communication Alternatives for Distribution Metering and Load Management," Record of Panel Presentations, 1979 Summer Power Meetings, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-99, No. 4 July/Aug/ 1980, IEEE, New York, NY, pp. 1448-1455, discloses on page 1449, column 1, that signals transmitted above 50 kHz were not detected at the receiving location, and that due to the shape of the attenuation curve (about 18db per octave), the higher frequencies would probably require special by-pass and repeating amplifiers to propagate. Significant attenuation occurred as low as 15 kHz, and noise levels increased significantly for frequencies below 3 kHz, so that a carrier frequency of 3 kHz to 12 kHz was chosen. See also page 1449, column 2, and page 1450, column 1, concluding that the optimum frequency range for power line carrier is 3 to 10 kHz.

Glen Loken et al., "The Proposed Wisconsin Electric Power Company Load Management System," 1976 Nat. Telecomm. Conf., Dallas, Texas, Nov. 1976, IEEE, New York, NY, pp. 2.2-1 to 2.2-3, discloses on page 2.2-2, column 2, that the distribution network acts like a lowpass filter with a very sharp cutoff at about 10 kHz. See FIG. 5. Consequently, as disclosed on page 2.2-3, column 1, the AS&E selected a carrier at about 6 kHz for a good compromise between

noise and signal transmissibility, and for direct signal transmission through distribution transformers, without repeaters.

In Abraham, absent the typographical error in col. 7, lines 34-35, there is no disclosure of power line carrier frequencies greater than approximately 1 MHz, and instead Abraham discloses power line carrier frequencies that are considerably less than 1 MHz. For example, the graph of power line attenuation versus carrier frequency in FIG. 21 ends at 300 kHz and the attenuation reaches a maximum at 280 kHz. Col. 3, lines 18 to 23 say: "The best frequency range [for] 120/240 V power lines is 70-160 KHz (this includes LAN operations). For data transmission through power line transformers the optimal frequency to use is the 25-45 KHz band. For very high speed LAN applications a frequency range of 70-480 KHz is appropriate." Col. 7 lines 45-52 say: "For most high voltage, long distance communications, the first and second carrier frequencies FA, FB will typically comprise frequencies that are less than about 160 KHz, having bandwidths of less than 20 KHz. When used for communication through power line transformers, FA and FB will typically comprise frequencies below 90 KHz (preferably 25-45 KHz) with bandwidth of about 6 KHz." Col. 12, lines 6-13 say: "The couplers of the present invention can be applied to LAN (local area network) communications and facilitate communication speeds up to 10 Kilobaud. For this application, the coupling means 14 preferably use a first carrier frequency FA of around 75 KHz (and 81.5 KHz for FSK) and a second carrier frequency FB of around 111 KHz (and 117.5 KHz for FSK) over power-lines 12 of up to about 1 KVAC." With respect to high voltage power-line communications, col. 12 lines 55-58, say: "The couplers of the present invention can be utilized for communication speeds up

to 9600 baud. In this application first FA and second FB carrier frequencies of 80 KHz and 115 KHz, respectively, are preferred, ..."

Not only is Abraham devoid of any example of using a power line carrier frequency of greater than approximately 1 MHz, but the modulator/demodulator circuitry disclosed in Abraham is incapable of operating at carrier frequencies that are greater than approximately 1 MHz. The following documents are enclosed for showing characteristics of the modulator and demodulator integrated circuits specified in Abraham:

1. Nichols, "Build a Pair of Line-Carrier Modems," Radio Electronics, July 1988, pp. 87-91.

2. ARRL Handbook for Radio Amateurs, The American Radio Relay League, Newington, CT, 1992, p. 18-25.

3. Vego's IC data-base: Phase Locked Loop's (PLL) from www.vego.nl/7/7_089.htm (6/8/2000).

4. Search for Exar XR2211, XR2207, and XR210 from www.exar.com/cgi-bin/seek/iseek.cgi (6/8/2000).

5. Data Sheet for XR-2207, Exar Corporation, Freemont, CA, June 1997.

6. Data Sheet for XR-2211, Exar Corporation, Freemont, CA, June 1997.

Abraham's modulator circuits use a type XR-2207 FSK generator (99 in FIG. 10A, 105 in FIG. 10B). This FSK generator can produce outputs over frequencies ranging from 0.01Hz to 1 MHz. (See page 89 of Nichols, and page 3 of the XR-2207 data sheet, listing 0.5 MHz as the "Min." upper frequency limit and 1.0 MHz as the "Typ." upper frequency limit for the oscillator section.)

Abraham's demodulator circuits use a type XR-2211 phase-locked loop (PLL) (97 in FIG. 10A and 111 in FIG. 10D), an XR-210 demodulator (403 in FIG. 10B), or a type 565 phase-locked loop (PLL)(109 in FIG. 10C). The type XR-2211 phase-locked loop can operate over a frequency range from 0.01Hz to 300 kHz. (See page 90 of Nichols, and page 4 of the XR-2211 data sheet, listing 100 kHz "Min." and 300 kHz "Typ." upper frequency limit for the oscillator section.) The type 565 phase-locked loop has an upper frequency limit of 500 kHz. (See the enclosed page 18-25 of the ARRL Handbook for Radio Amateurs, and the entries for the SE565 and NE565 in the Vego's IC data-base.) The Vego's IC data-base indicates that the XR210 is a 20 MHz PLL special for FSK, but the XR210 could not be found on the EXAR web site, as seen from the EXAR web site search print-out. Possibly, the XR-2211 demodulator would be used for Abraham's low-frequency range of 25-45 kHz, the type 565 demodulator would be used for Abraham's mid-frequency range of 70-160 kHz, and the XR210 would be used for Abraham's highest frequency range of 70-480 kHz. In no case can Abraham's modulator/demodulator circuitry be used for carrier frequencies greater than 1 MHz because in each case the XR2207 is used as the modulator and it will not produce a modulated output signal in excess of 1 MHz. Neither can the XR-2211 nor the type 565 PLL demodulate a signal in excess of 1 MHz.

In short, the disclosure of Abraham is insufficient to have placed the applicant's invention in the possession of a person of ordinary skill in the art of power line carrier communications. A person of ordinary skill would dismiss the reference to 11 MHz as typographical error, where 1 MHz was intended. Nor could the applicant's invention result if one were to build the circuitry described in Abraham, because Abraham's modulator circuitry would not produce a modulated signal of at least 1 MHz.

In view of the above, it is respectfully submitted that the application is in condition for allowance. Early allowance is earnestly solicited.

Respectfully submitted,

Richard C. Auchterlonie
Reg. No. 30,607

Howrey Simon Arnold & White, LLP
P.O. Box 4433
Houston, Texas 77210-4433
(713) 787-1400

Date: 9 June 2000